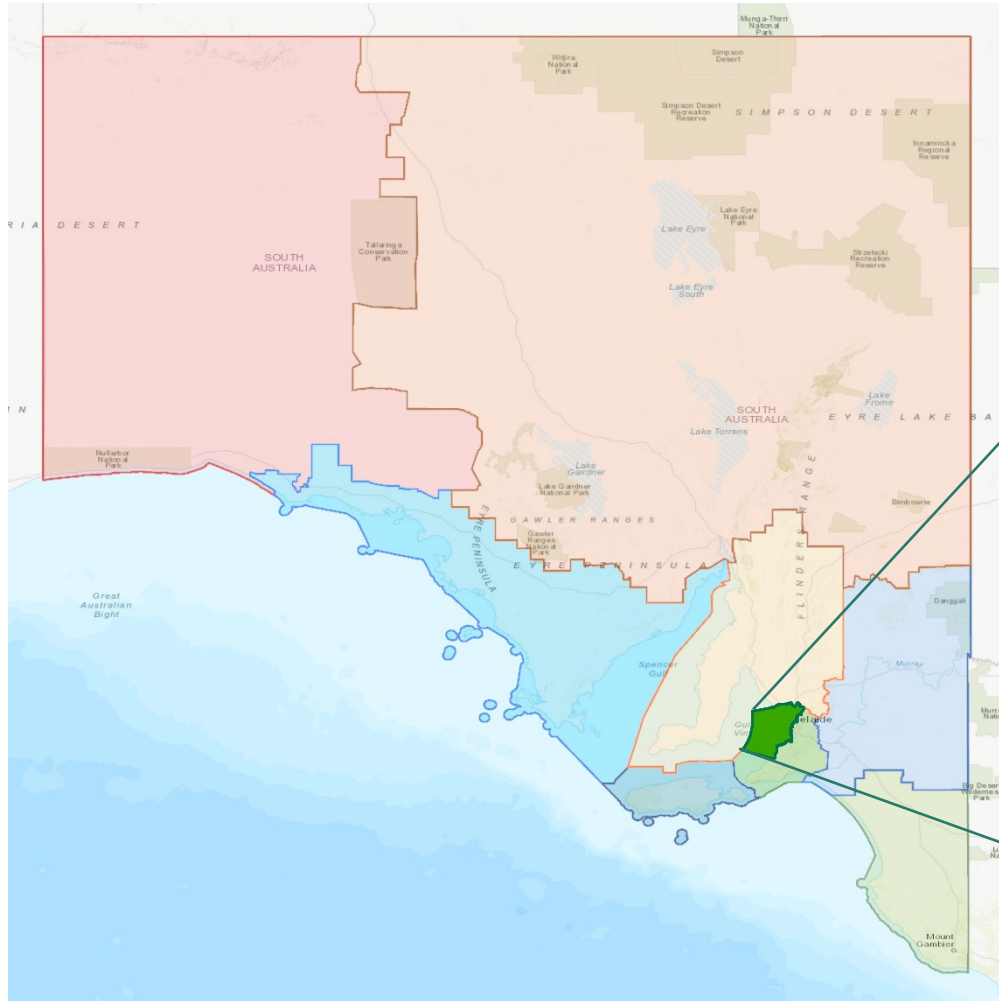


Returning Platypus to the Torrens: Turning a Dream into Reality

Chris Daniels
Chair Green Adelaide

Presentation to
Kadaltilla
Adelaide Park Lands Authority





Local government areas

- | | | | | | |
|----------------|-----------------|----------------------------------|--------------------------|-------------------|-----------------|
| 1 Adelaide | 4 Charles Sturt | 7 Mitcham | 10 Playford | 13 Salisbury | 16 Walkerville |
| 2 Burnside | 5 Holdfast Bay | 8 Norwood Payneham and St Peters | 11 Port Adelaide Enfield | 14 Tea Tree Gully | 17 West Torrens |
| 3 Campbelltown | 6 Marion | 9 Onkaparinga | 12 Prospect | 15 Unley | |





Coastal management



Water resources and wetlands



Biodiversity sensitive and water sensitive urban



Fauna, flora and ecosystem health in the urban environment



Green streets and flourishing parklands



Nature education



Controlling pest plants and animals



“A cooler, greener, wilder and climate resilient Adelaide that celebrates our unique culture”

Kardalta Tarntanya



Illustration by Allan Sumner

Platypus

- Semi-aquatic Monotreme
- Veg nest
- Undercut, concealed
- Forage in water

- 1-3 eggs and Altricial Puggles
- Incubated in nesting burrow
- Young Emerge in summer

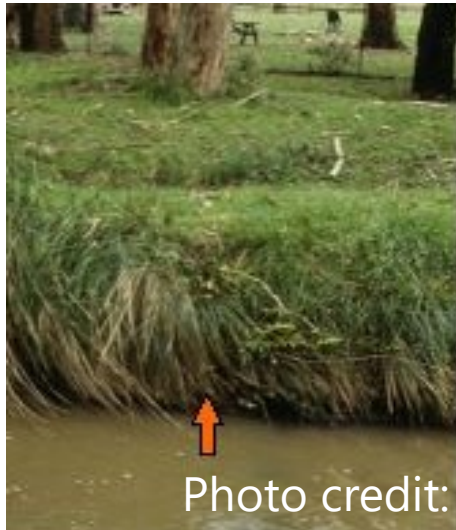
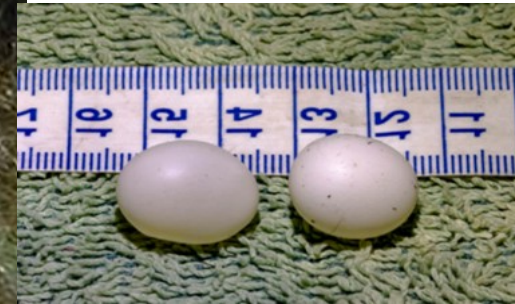


Photo credit:



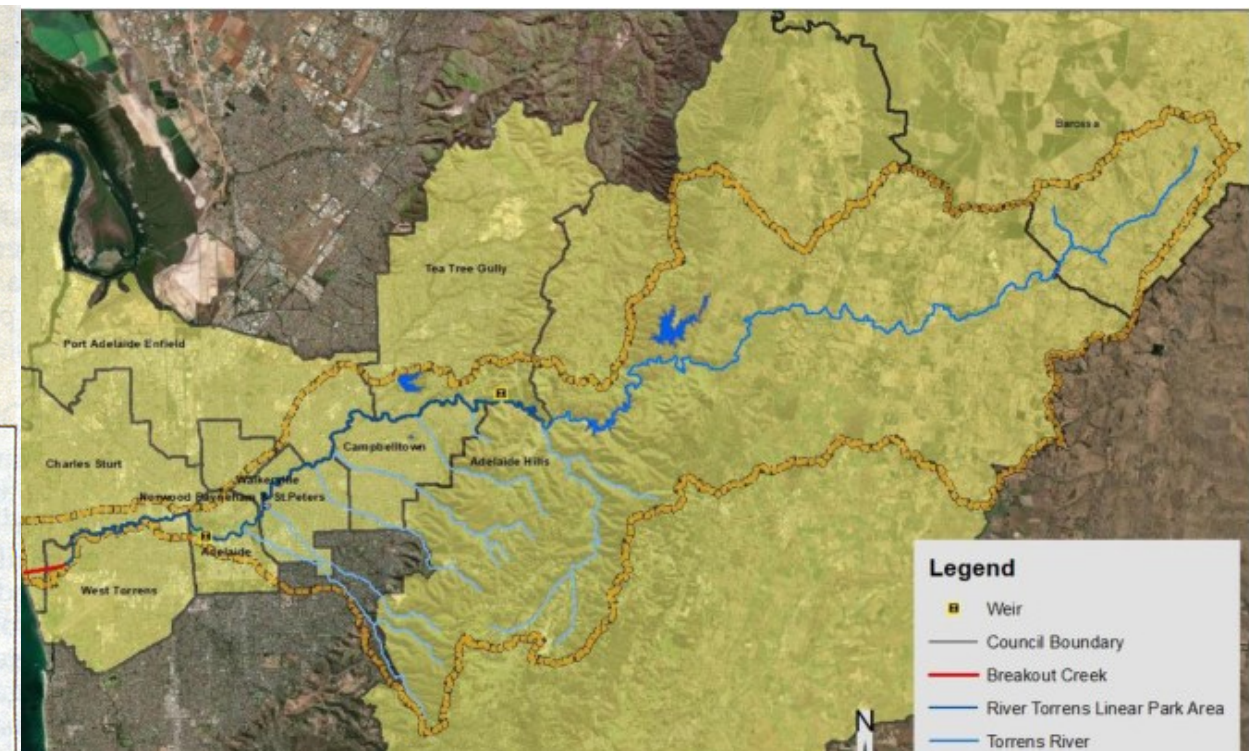
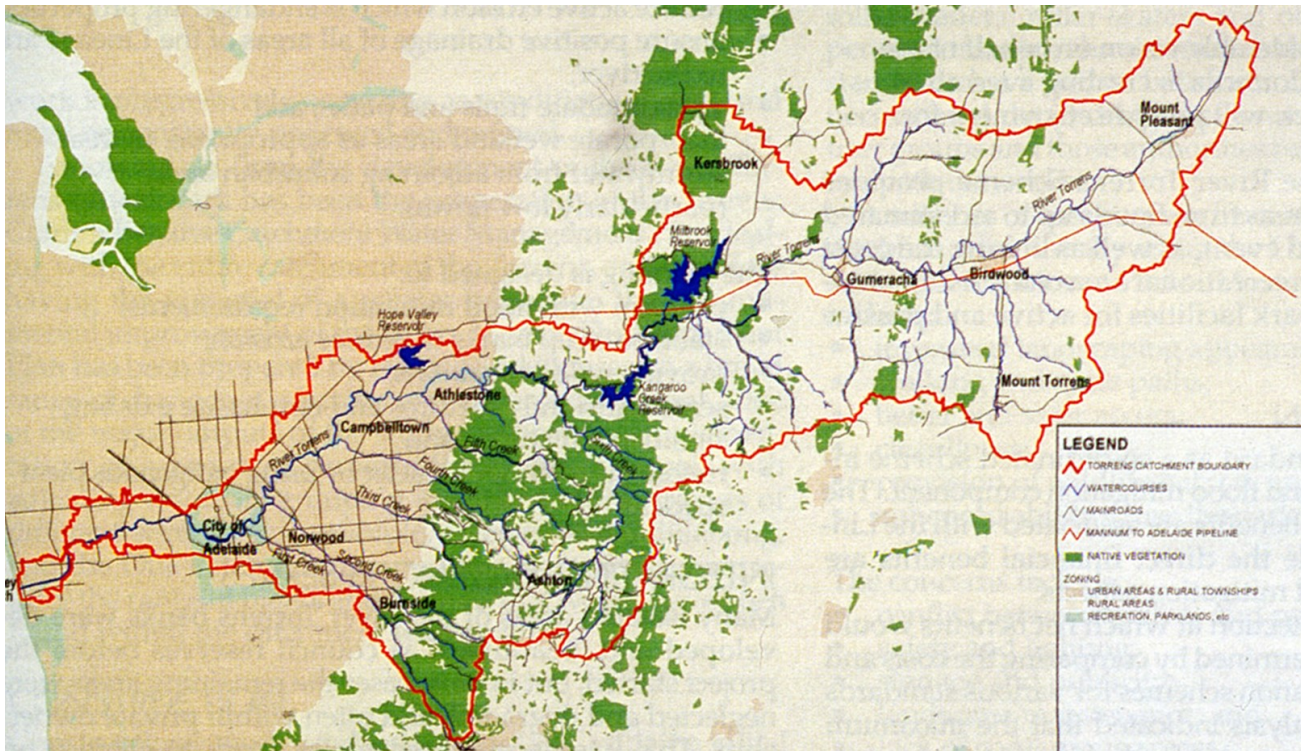
Thomas et al 2018

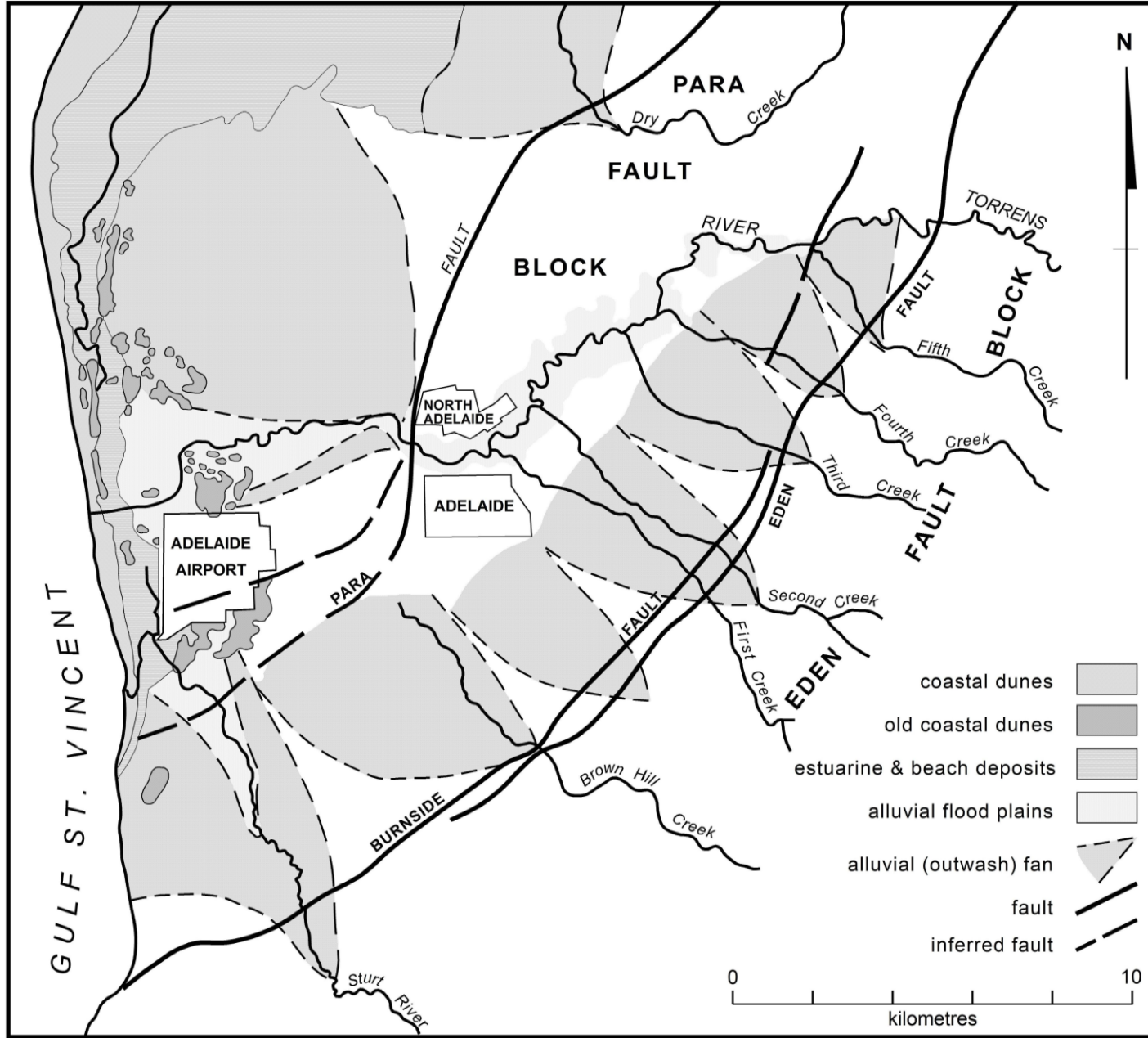




Credit: Hobart Rivulet Platypus

A Brief (Un)Natural History of the River Torrens

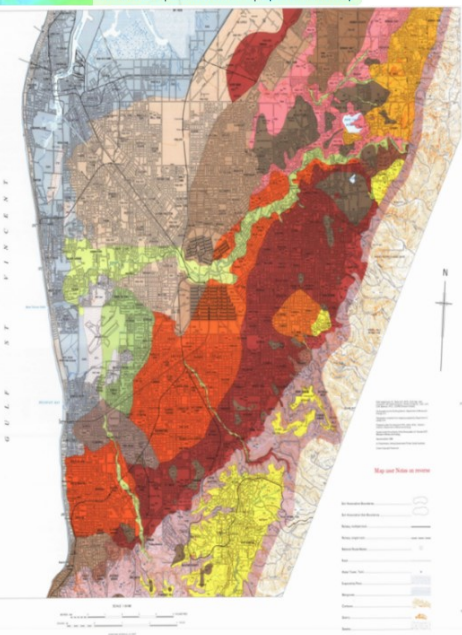
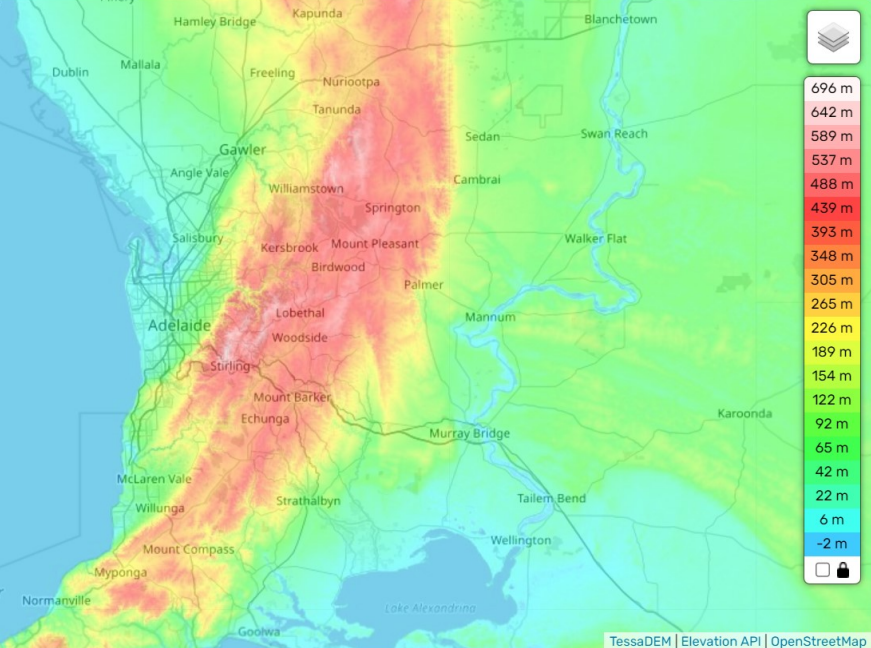




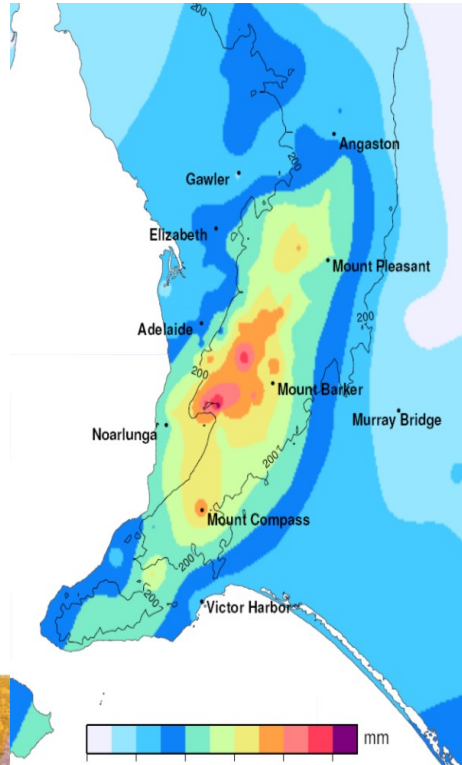
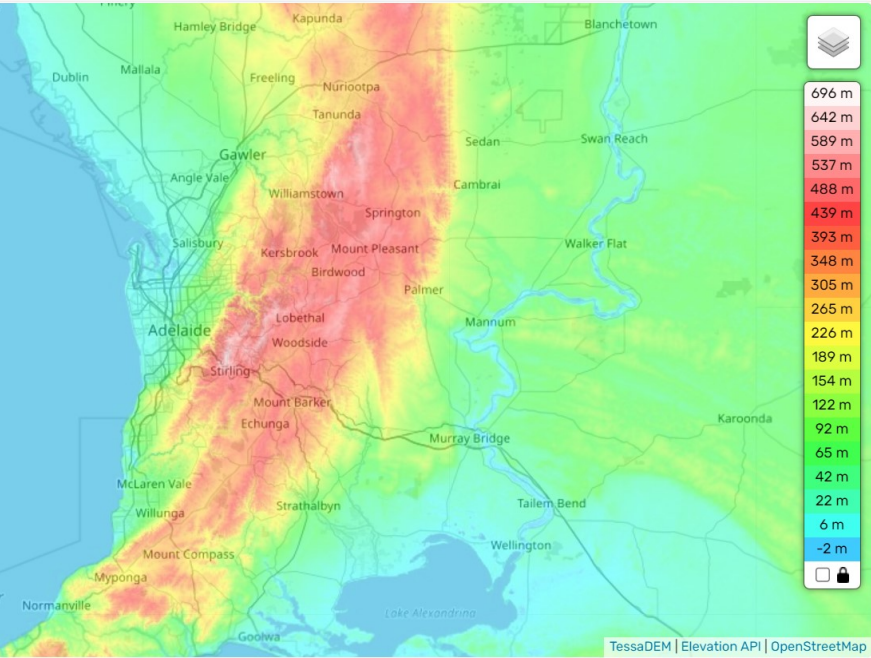
First to Fifth Creeks, with First being the closest to Adelaide's city-centre and the rest numbered consecutively eastward, were originally named **Greenhill, Hallett, Todd, Anstey and Ormsley rivulets respectively**. They flow vigorously in winter and spring but are otherwise dry, except for small flows in limited areas upstream.

Moriatta" a [Kaurna](#) word meaning "ever flowing" is now the official name of Fourth Creek.

Geography, Climate, Rainfall and Resultant Ecosystems



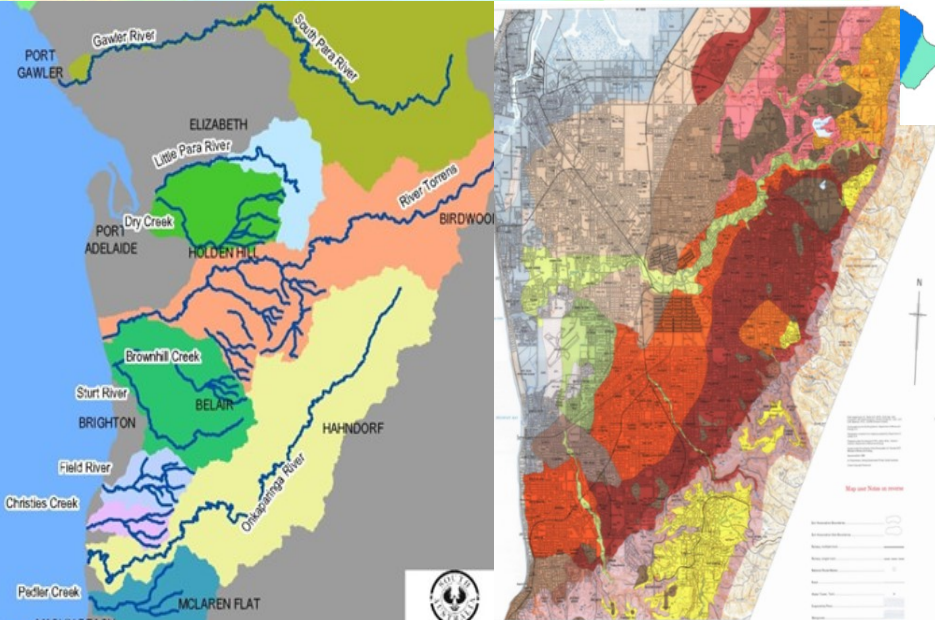
Geography, Climate, Rainfall and Resultant Ecosystems



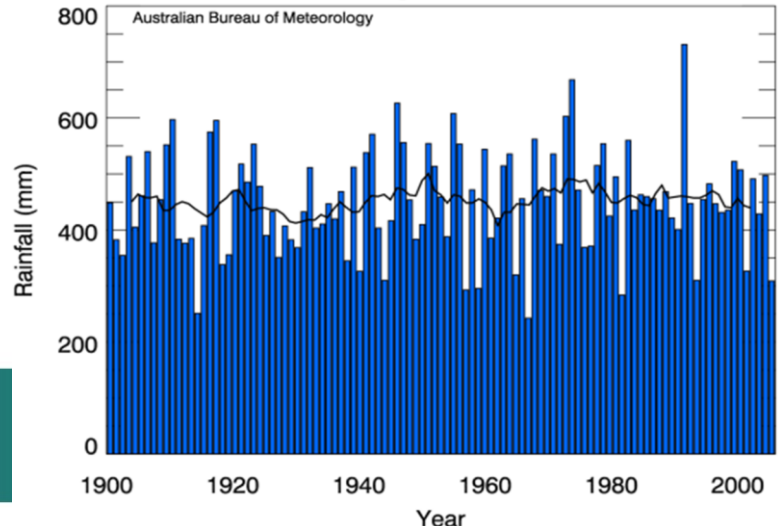
Month Median rainfall (mm)

January	21.7
February	10.4
March	20.2
April	32.6
May	56.6
June	82.2
July	68.8
August	69.2
September	58.0
October	43.0
November	30.8
December	23.8

Annual 560.8



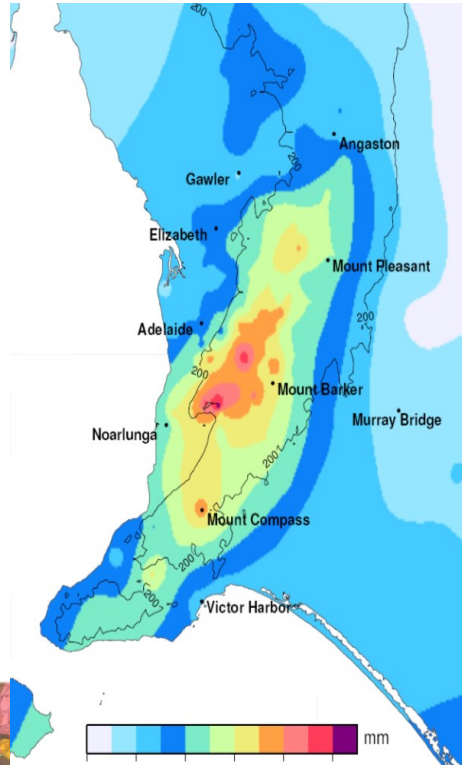
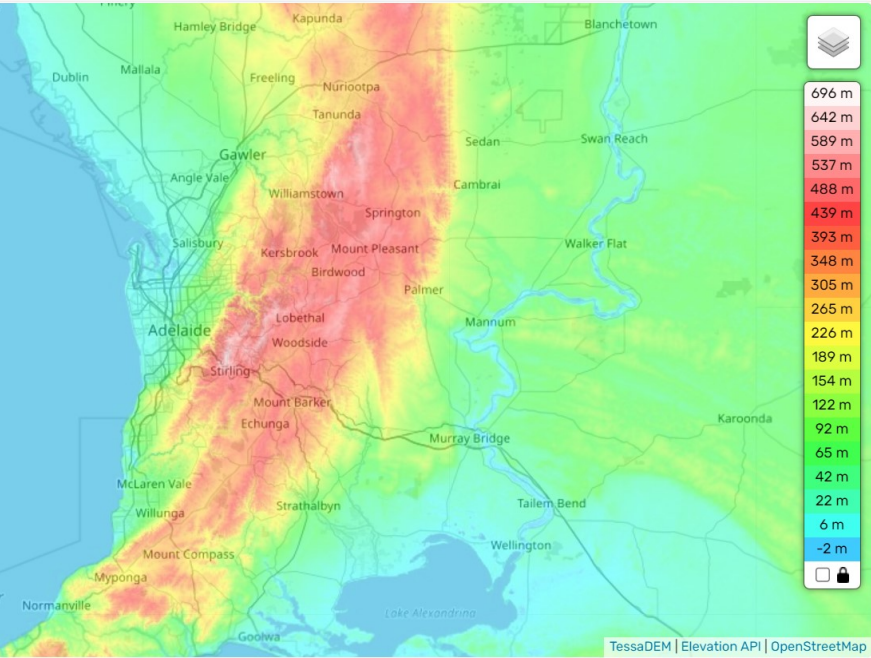
Annual Rainfall for Region 138.5:139.5E, 34.5:35.5S



MASLIN BEACH
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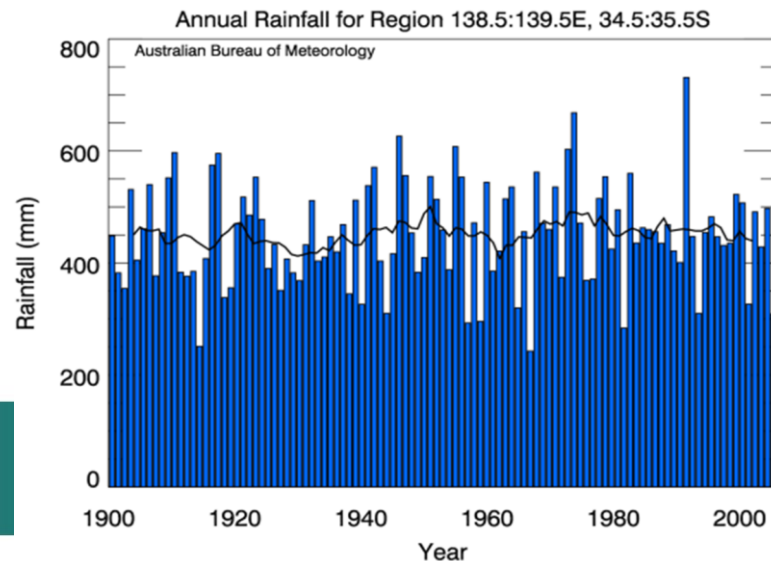
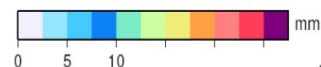
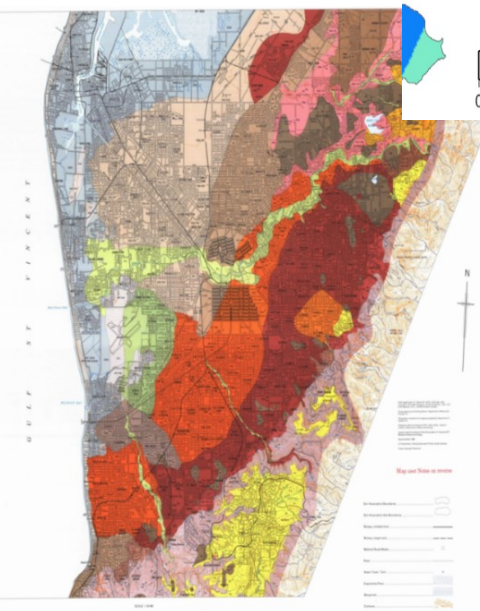
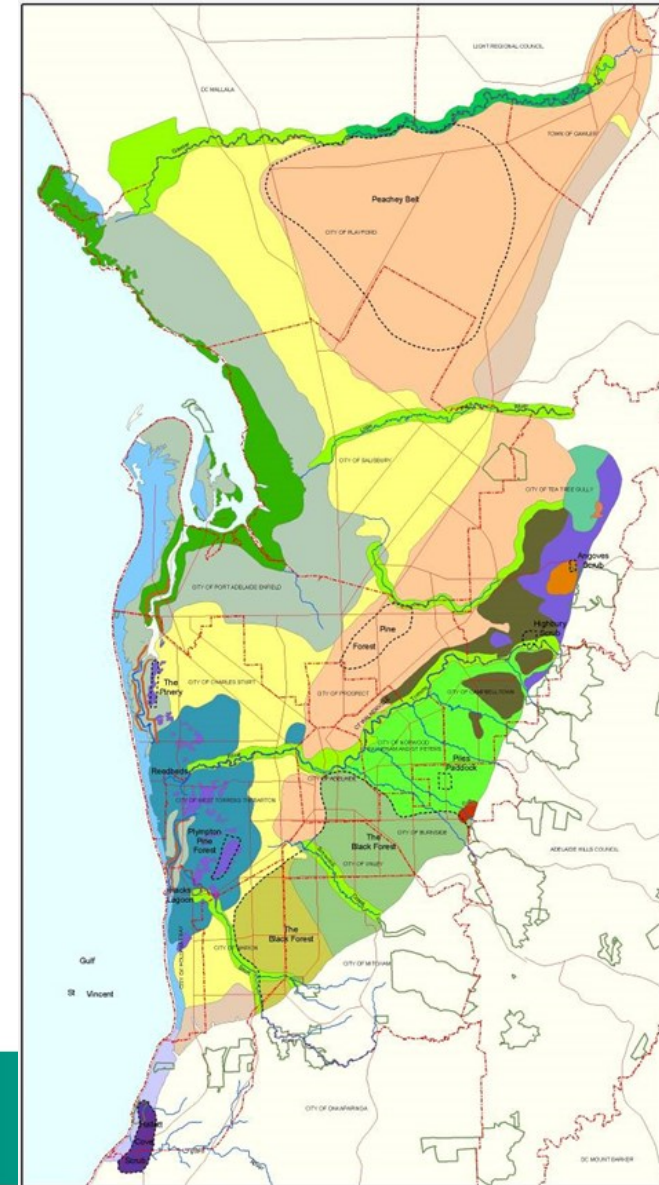
Geography, Climate, Rainfall and Resultant Ecosystems



Month Median rainfall (mm)

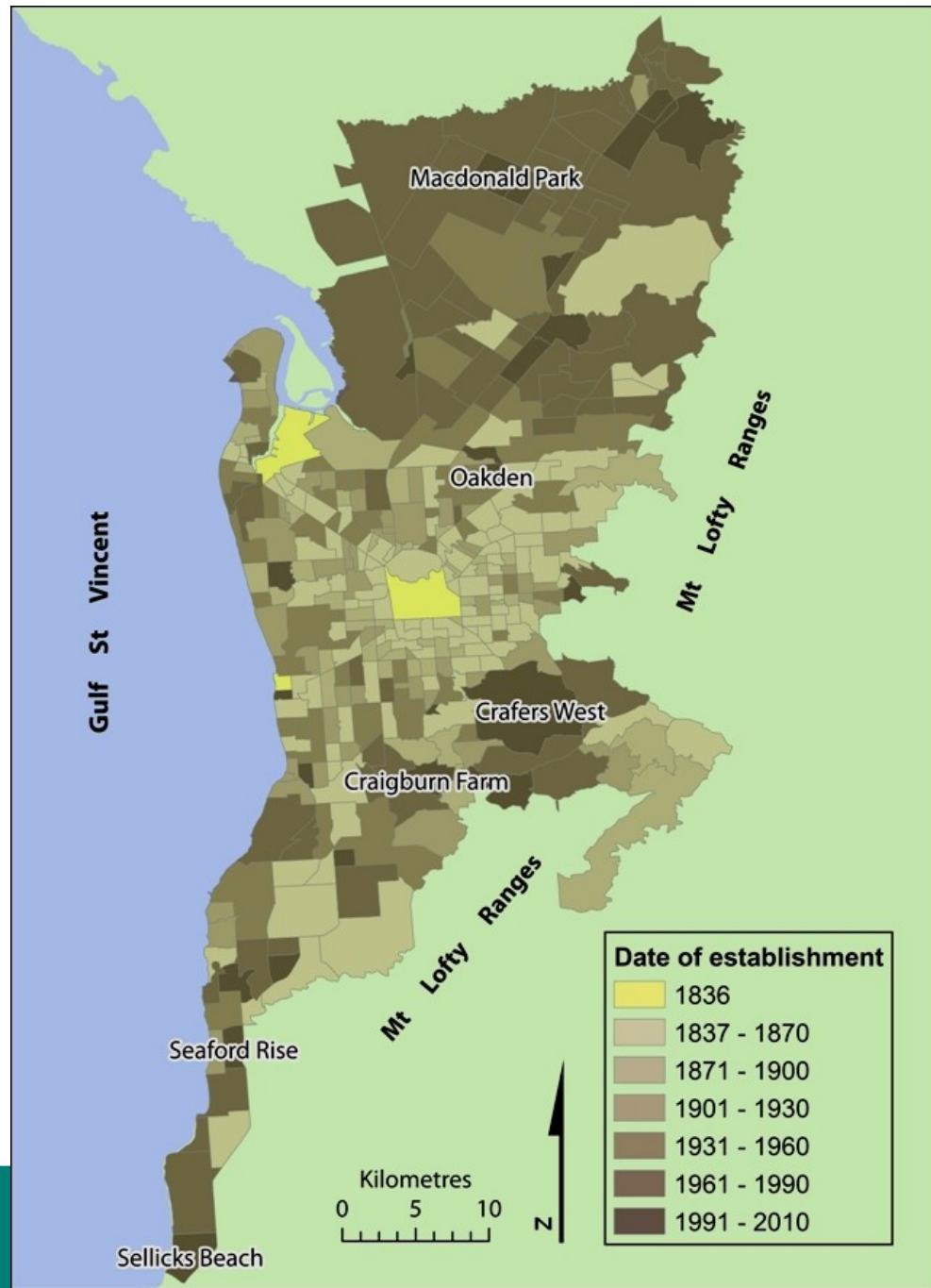
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Annual	560.8

PLANT ASSOCIATIONS OF THE ADELAIDE PLAINS



The growth of Adelaide's suburbs

- Over 80% of South Australia's population
- Adelaide now houses almost 1.5 million people



The Torrens River in 1840



B 15276/1 Reproduction rights: State Library of South Australia

Changes at Settlement



Karrawirra Parri/River Torrens, ca. 1880



SOUTH AUSTRALIAN COMPANY'S MILL ON THE TORRENS.
FROM A SKETCH BY F. H. DODD, 1844.

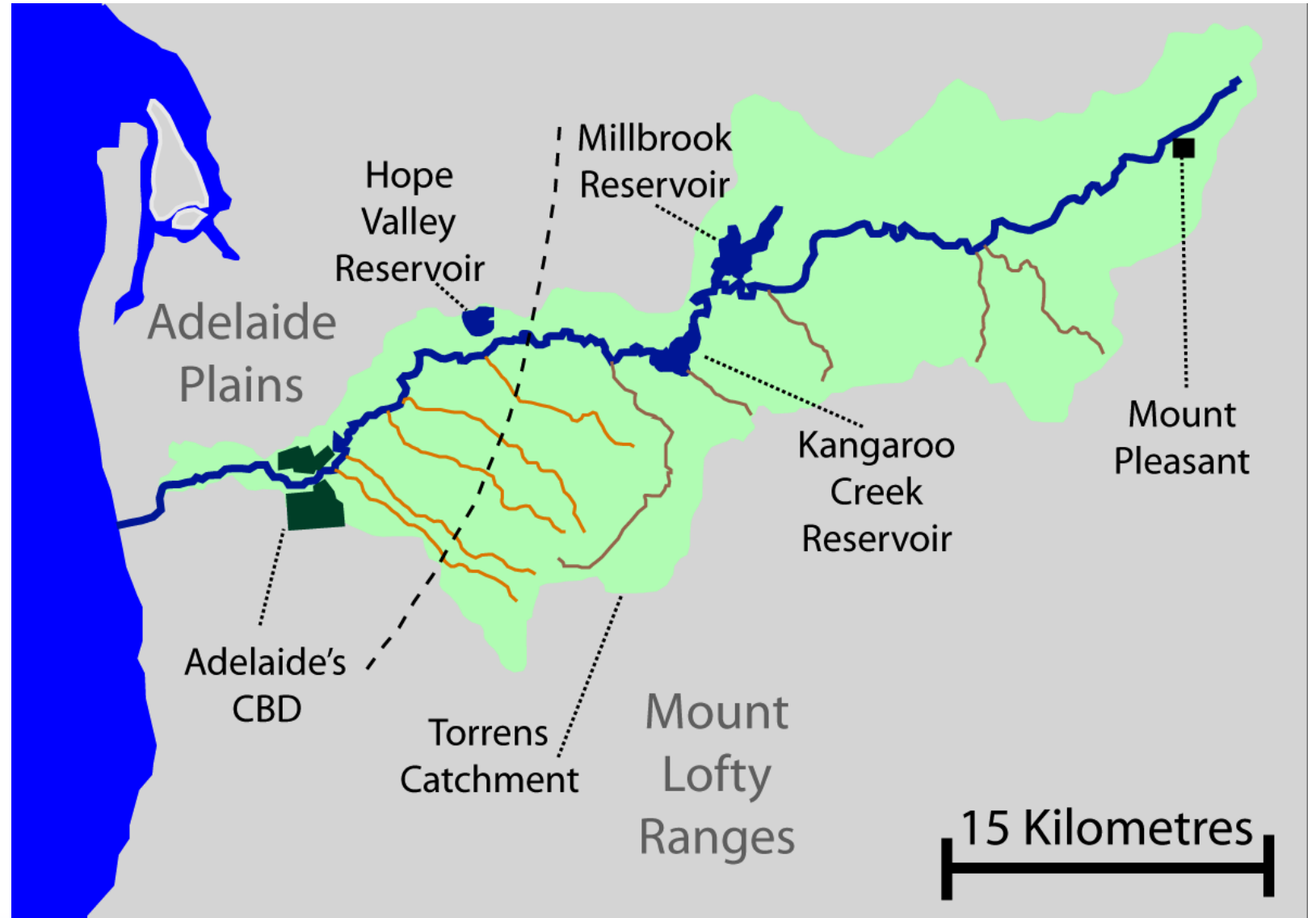


© MAPCC 2010

Reconstructing the River

- Thorndon Park
- 1859
- Hope Valley
- 1872,
- 28,400 MegaL
- Millbrook
- 1918 ,
- 16,500 MegaL

- Kangaroo Creek Reservoir
- 1969, 24,400 MegaL



Torrens Weir, Lake and Torrens Bridges

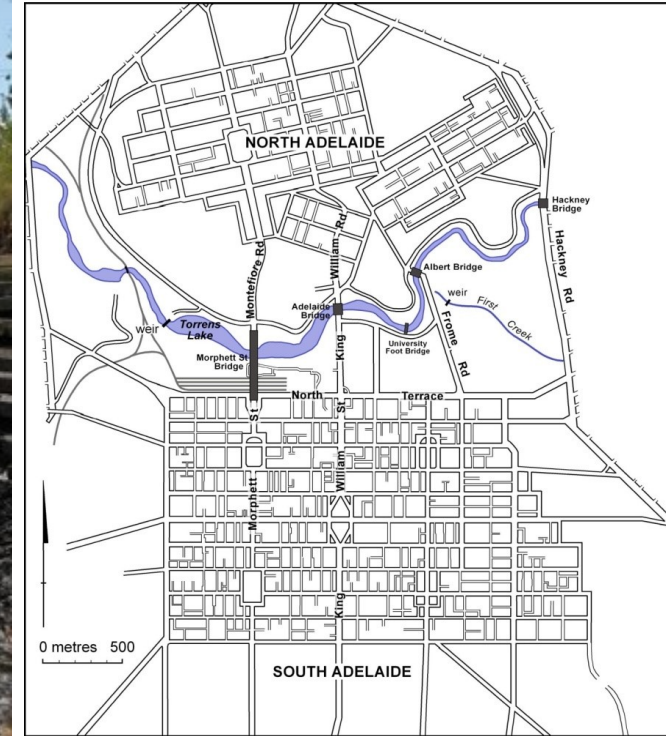
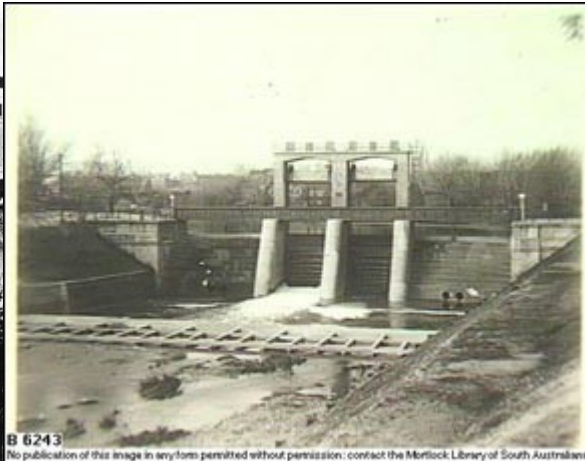
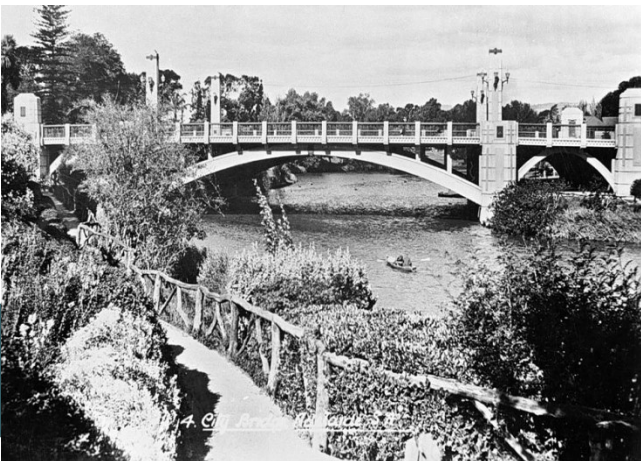


Figure 6: Torrens Lake and City of Adelaide bridges

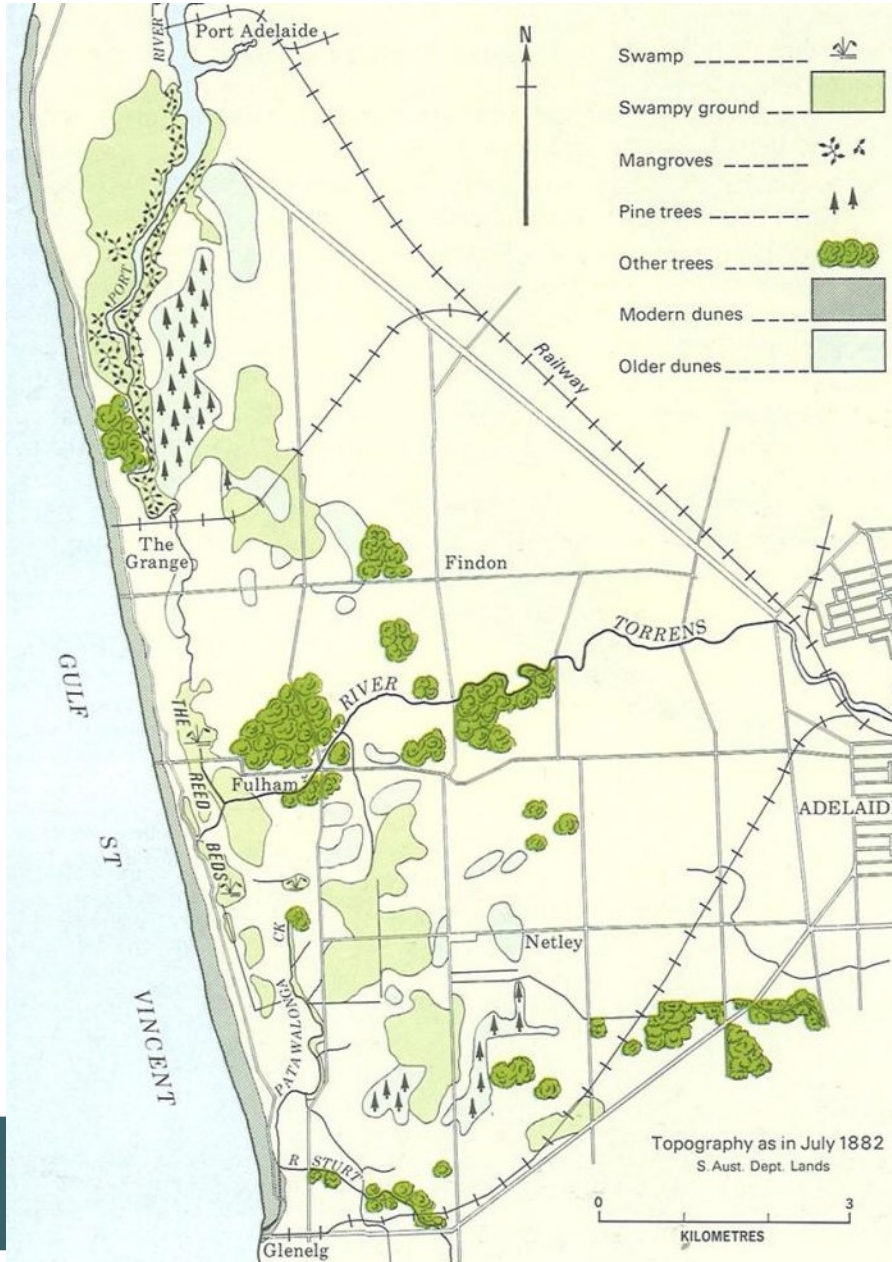


Managing Flooding--Breakout Creek

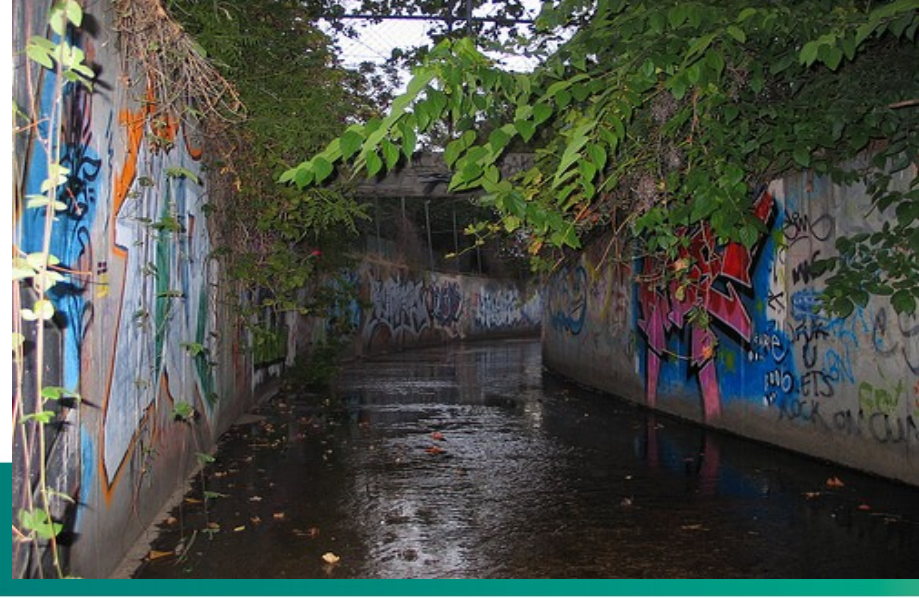
- *Metropolitan Drainage Act, 1933* -- an outlet for the river be created covering a 1 in 60 year flood.
- 1935 - 1938, the construction of a new, concrete lined channel (called *Breakout Creek*)
- 3.5 km through the Reedbeds and coastal dunes to the sea.



Draining the reedbeds from 1930's



Turning Creeks into Drains



1. ALGAE AND DUCK WEED
2. HEAVY METALS
3. E. COLI AND DISEASE ORGANISMS
4. HUMAN AND VEGETATIVE POLLUTION

Algal bloom prompts Torrens closure

Posted January 20, 2012 13:54:56

The River Torrens has been closed to some river users from Hackney Road to the Adelaide weir because of an increase in blue-green algae.

The water is now off limits to rowers and paddleboats but Popeye cruises and the Adelaide Gondola will continue to operate.

The Adelaide City Council made the decision and says the increase in algae has been caused by hot and dry weather.

Water quality tests will be carried out on Monday, with results to be known by Wednesday.

SA Health says toxins released by blue-green algae can cause skin irritations, gastroenteritis and damage to the liver and nervous system.

The Torrens Lake is routinely closed because of algal blooms.



PHOTO: Signs warning people not to touch the water will be put up along the bank (Emma Rodgers: ABC)

MAP: Adelaide 5000

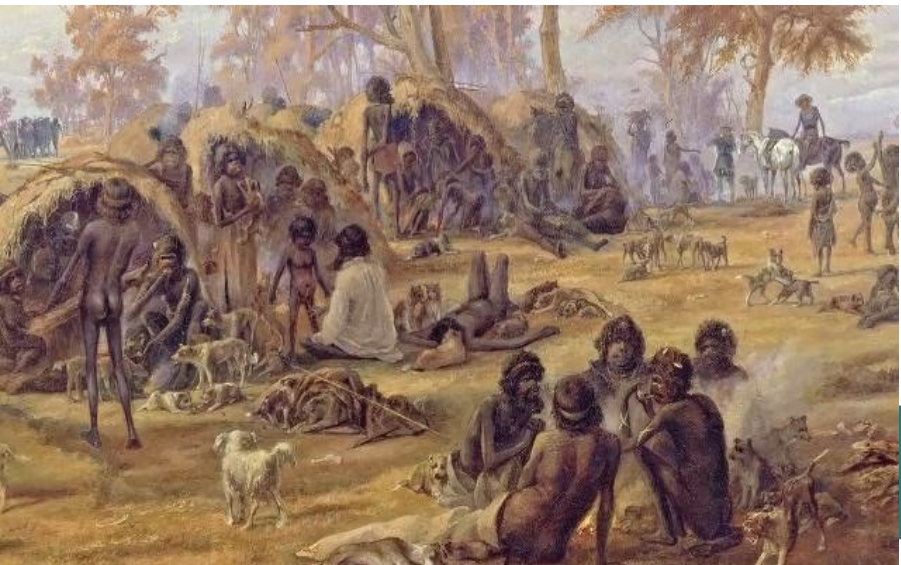




Degraded banks poisoned water introduction of feral plants and animals led to the loss of Aboriginal people and biodiversity

...anything in the guise of a river more ugly than the Torrens would be impossible to either see or describe... —

Anthony Trollope prior to 1880



Torrens Linear Park 1979 -1997

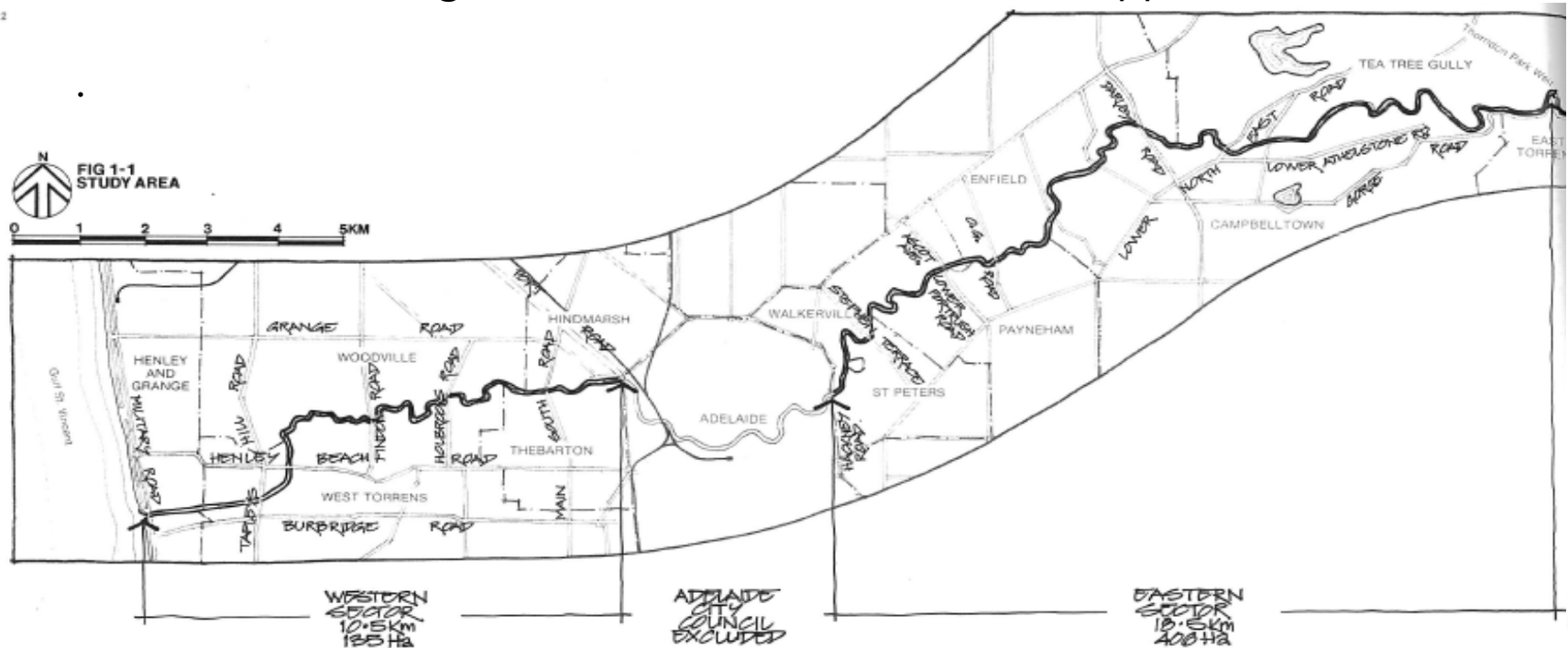
unique and remarkable in many ways

reduces potential major flood problems,

30 km of the River Torrens from the Adelaide Hills to the coast involves innovative low cost flood mitigation measures

a major conservation and recreation project

restores the existing man-modified river to what will appear to be a natural water-way;



Why revegetate the Linear Park?

Amenity

Ecosystem Services



The River as a Living Catchment --- Types of ecological restoration

ECOLOGICAL RESTORATION OPTIONS

(returning a landscape, in some measure, to a pre-existing ecological state)

REHABILITATION (help for recovery)		RECONSTRUCTION (making anew)	
Repair	Reintroduction	Replication	Replacement
Repairing damage to an existing native landscape (mainly by removal of damaging intrusions and impacts)	Reintroducing original elements of an existing native or relict landscape	Replicating the form and function of a pre-existing native landscape using indigenous materials	Replacing some elements of the form and function of a pre-existing native landscape using indigenous or introduced materials

Level of Ecological Integrity Before Restoration

High

Low

Level of Ecological Artificiality after Restoration

Low

High

Focussed regenerated sites

St Peters Billabong, Tullya Wodli, Adelaide Zoo Precinct, Botanic Gardens, Breakout Creek 1-3

Tullya Wodli

late 1800's

2015



Breakout Creek Stage 1 Revegetation



- TOP – Breakout Creek immediately before construction commenced in Feb 2009
- BOTTOM – Breakout Creek Jan 2011



Breakout Creek Stage 2

From

To



Breakout Creek (Purruna Pari) Stage 3

From

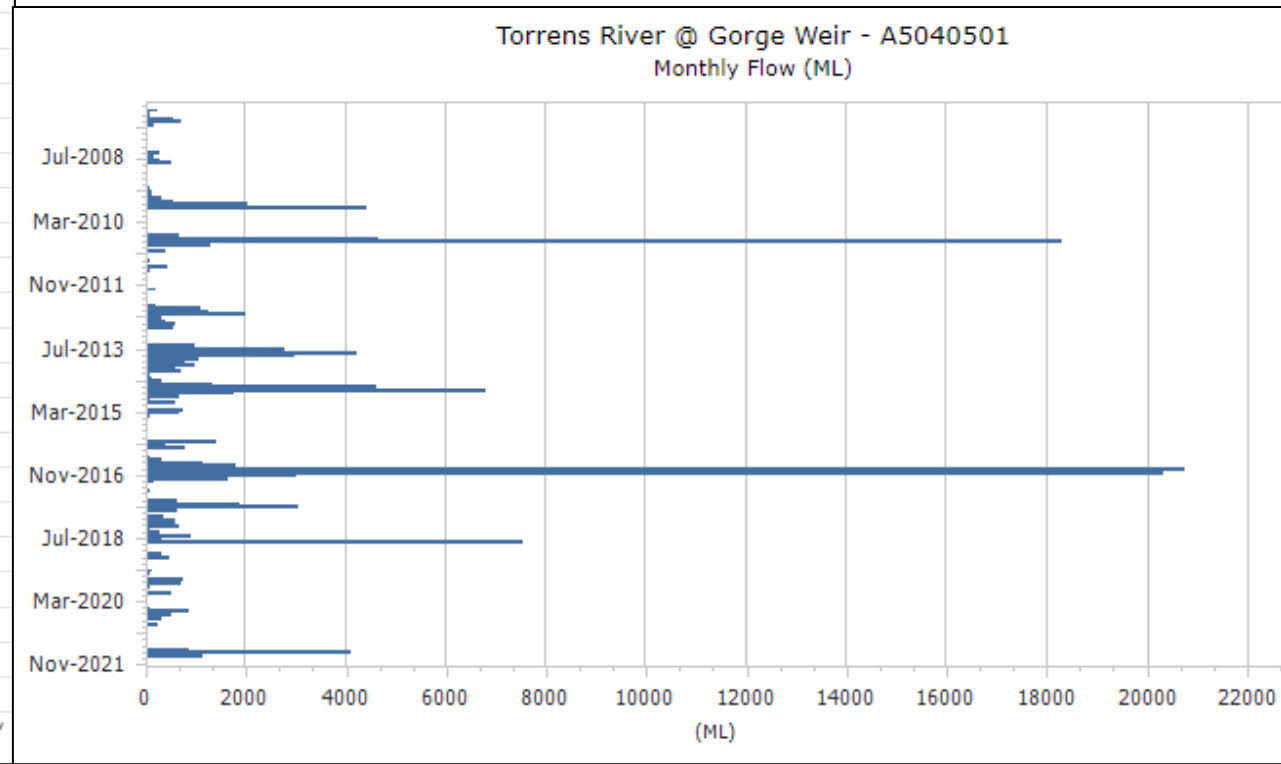
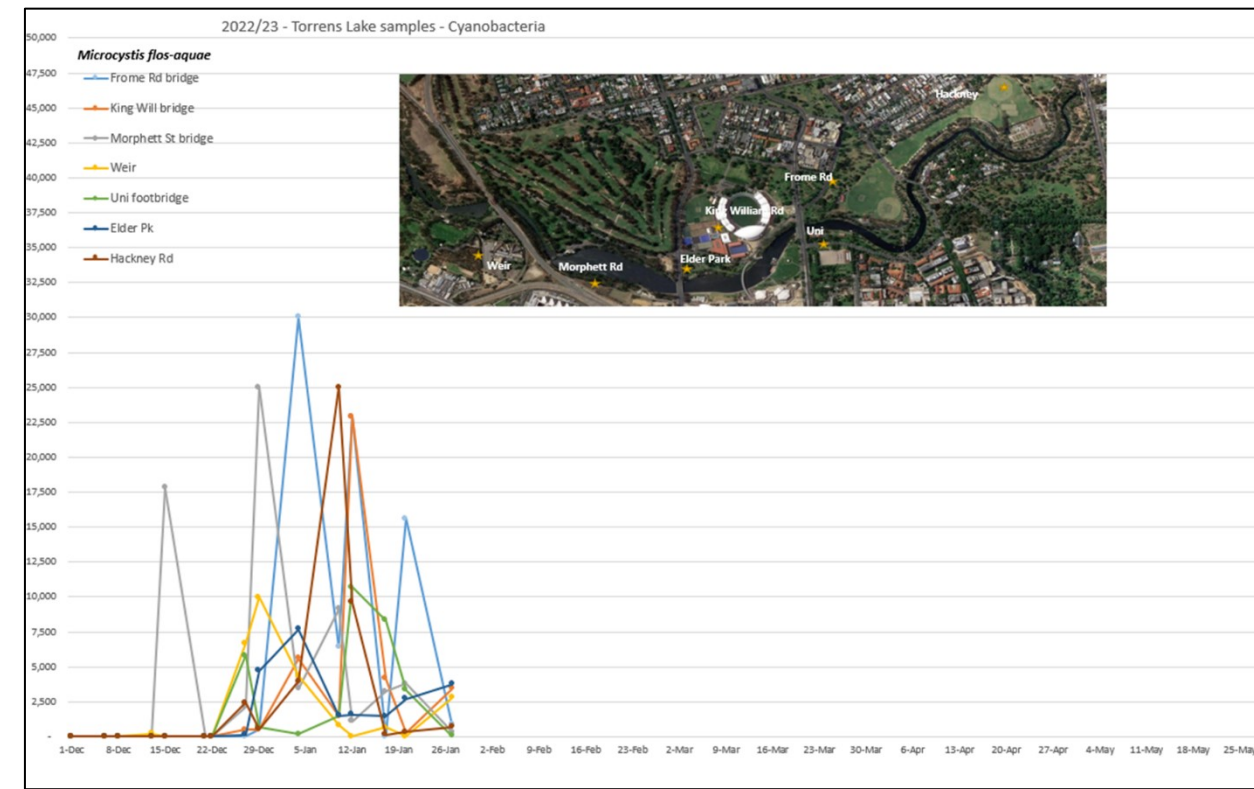
To



Managing Cyanobacteria – No blooms since 2012

Example of cyanobacteria concentration data used as part of the dilution flow decision making process

*Monthly flow data at Gorge Weir
dilution flow is usually 130 ML per day over three days*



Environmental Flows Trial for the River Torrens



The environmental flows will be delivered in four basic phases that mimic natural seasonal flows

No flow A dry phase where the river separates into a series of pools. Periods of no flow are important in recycling of nutrients and creating food sources for aquatic animals. They also give native fish an advantage over introduced fish species.



Low flow These minimum flows are experienced over low rainfall months and are vital to maintaining the right water temperature and quality in pools, which provide an essential refuge for fish and other water-dependent life in dryer seasons.



Fresh flow These flows provide higher volumes of water and create more habitat for fish and allow them to travel between pools. The flows are essential to maintaining viable and widely distributed populations of fish.



Flush flow These high-volume, high-velocity flows scour sediment and vegetation that build up during lower flows. Over time sediment fills spaces between rocks, significantly reducing habitat for bugs, fish and other aquatic animals such as yabbies. Flush flows also allow fish to migrate both up and downstream and can provide important passage to the sea during breeding events.

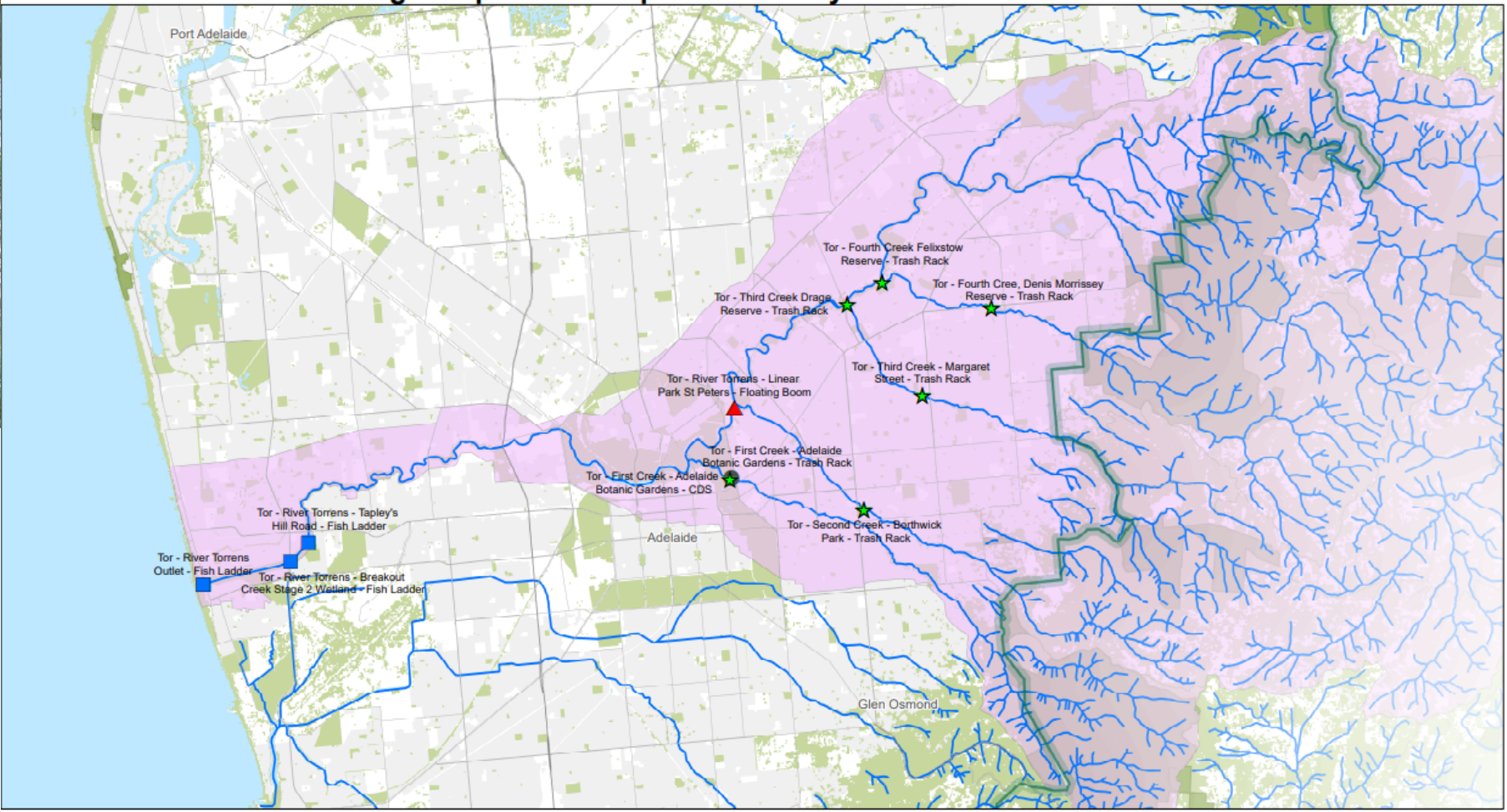


Collection of pollutants using booms, GPTs and sediment traps

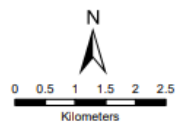
95% of gross pollutants are organic (leaves etc)



Green Adelaide gross pollutant traps and fishways in the River Torrens catchment



- Legend**
- GPTs and Fishways
 - Green Adelaide
 - National parks and reserves
 - Freeways and highways
 - Watercourses and water bodies
 - Main roads
 - Other reserves and vegetation
 - Watercourses
 - Built-up areas
 - River Torrens catchment
 - CDS
 - Fish Ladder
 - ★ Trash Rack
 - ▲ Floating Boom



Produced by: Green Adelaide
 Data sources: South Australian Government
 Compiled: 19 June 2023
 Coordinate system: ODA 1994 MGA Zone 54
 Projection: Transverse Mercator
 Datum: GDA 1994

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6TH CREEK
CATCHMENT GROUP

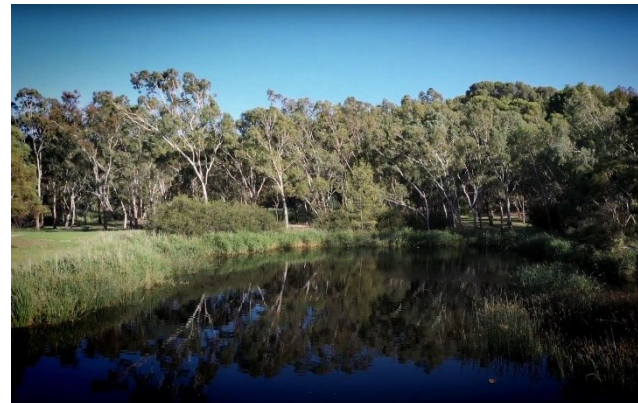
Drone Footage



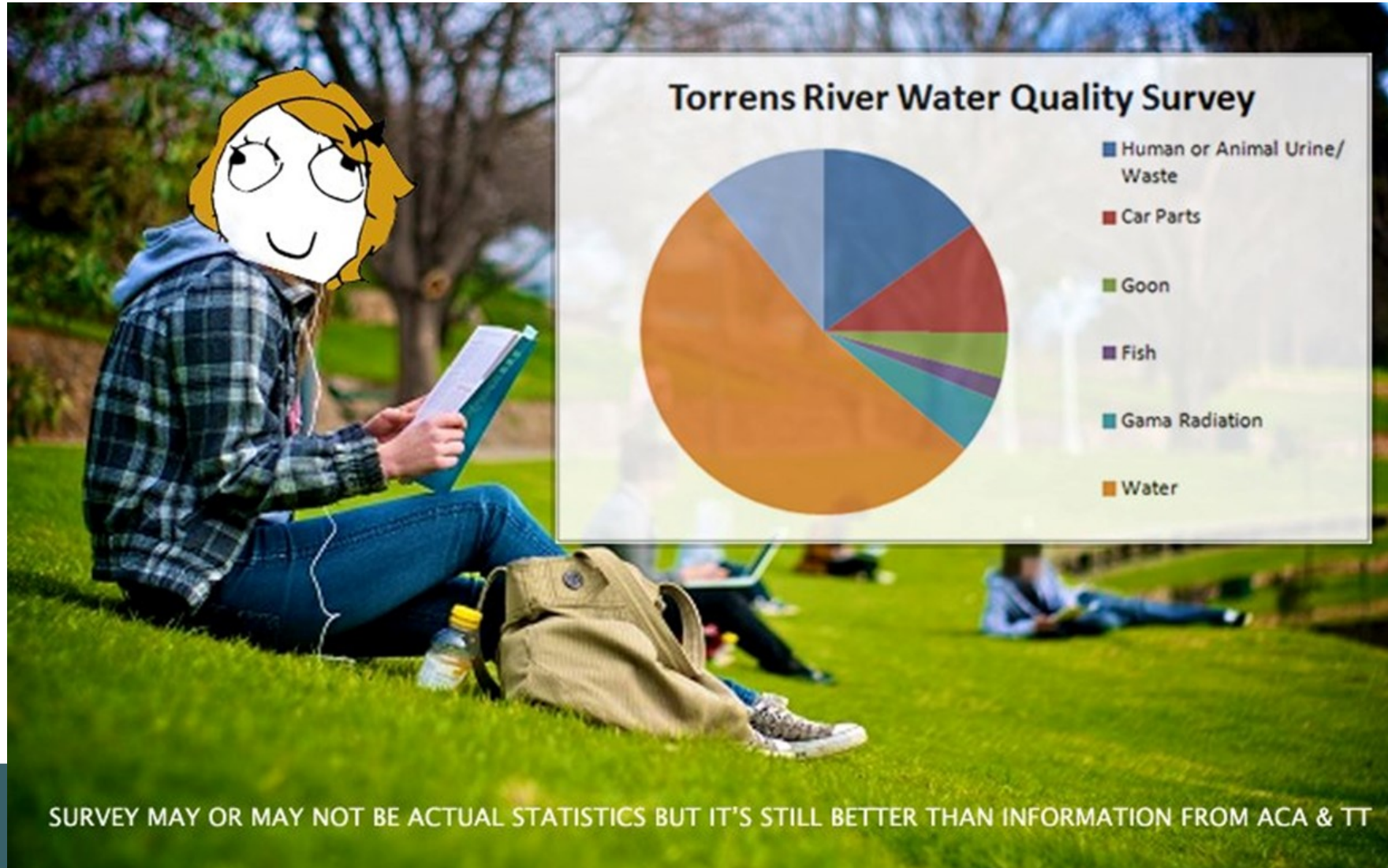
- **The last 20 years have seen a massive improvement in an extra-ordinarily difficult ecosystem to manage, made worse by 150 years of piecemeal and destructive human actions**
- What do we want from the River Torrens in 2024?
- **NOT A return to its “Natural” (pre 1836) condition**
- **BUT** A River with
 - 1: High provision of Ecosystem services to the region(s)
 - 2: High Amenity Value for the community
 - 3: A reliable water source for the community(ies)
 - 4: A Biodiversity hotspot and green-link between ecosystems
 - 5: A quality estuary and limited impact on Marine Ecosystems

Why platypus?

An Apex Animal in a riparian system



AND.... to Deal with The Big Issue: Community engagement and recognition



Platypus Requirements

- Food
 - Macroinvertebrates
- Water
 - Flows
- Habitat
 - Predators
 - Safety from Predators
 - Locations for Burrows
 - Locations requiring ongoing work



Australian Platypus Conservancy



Water Flow

- Low flow and cease to flow periods
- Development of hydraulic model
- Simulation analysis flow-habitat
- Partner with SA Water



Platypus safety and burrows

- Analysis of potential predators
 - –foxes, cats, dogs, Water rats
- Amount of 'loop' litter
- Barrier considerations, ie weir walls
- Vegetation priorities
- Weeding priorities (e.g. bullrushes)
- Creation of Safe Havens

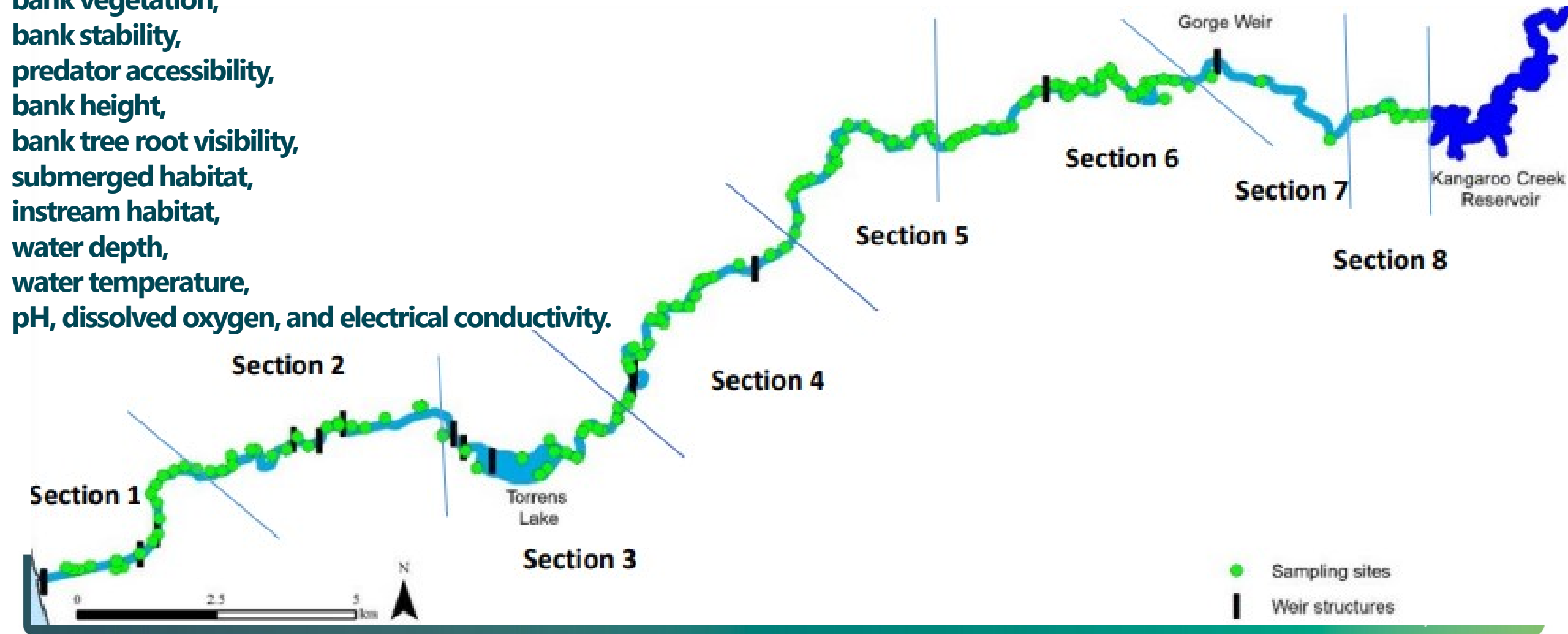


Habitat

The river was divided into eight sections that reflecting geomorphic, hydrologic and management differences

Parameters recorded along 8 stretches of the River Torrens catchment included:

stream type (pool/riffle),
bank vegetation,
bank stability,
predator accessibility,
bank height,
bank tree root visibility,
submerged habitat,
instream habitat,
water depth,
water temperature,
pH, dissolved oxygen, and electrical conductivity.





Opera house *round up*




When: October 8
10am – 4pm

Where: Happy Valley Reservoir

What: Exchange your opera house net for a pyramid net to help species like the platypus.

RECFISH SA
GREEN
ADELAIDE

Creating a Plan for Reintroduction 2024-2026

- Translocation proposal
 - The species • Translocation type • Why it's necessary • Objectives • Risk Management • Key people, their roles and responsibilities • Where • Methods • Timeline
 - Risk management and quality control step • Ensure project is scientifically sound, and technically feasible
- Source Animals (Genetics)
- Permits, Ethics and Endorsements
- Collect Animals
- Select Locations and Timing for Release
- Staff Training
- Create Citizen Science Groups
- Monitoring Platypus Health and Wellbeing
- Engaging Kurna and other Aboriginal Groups
- Creating Safe Havens
- Obtain Corporate and Private Funding
- River Governance and Org/Govt Collaborations
- Communications and Engagement
- Disaster management



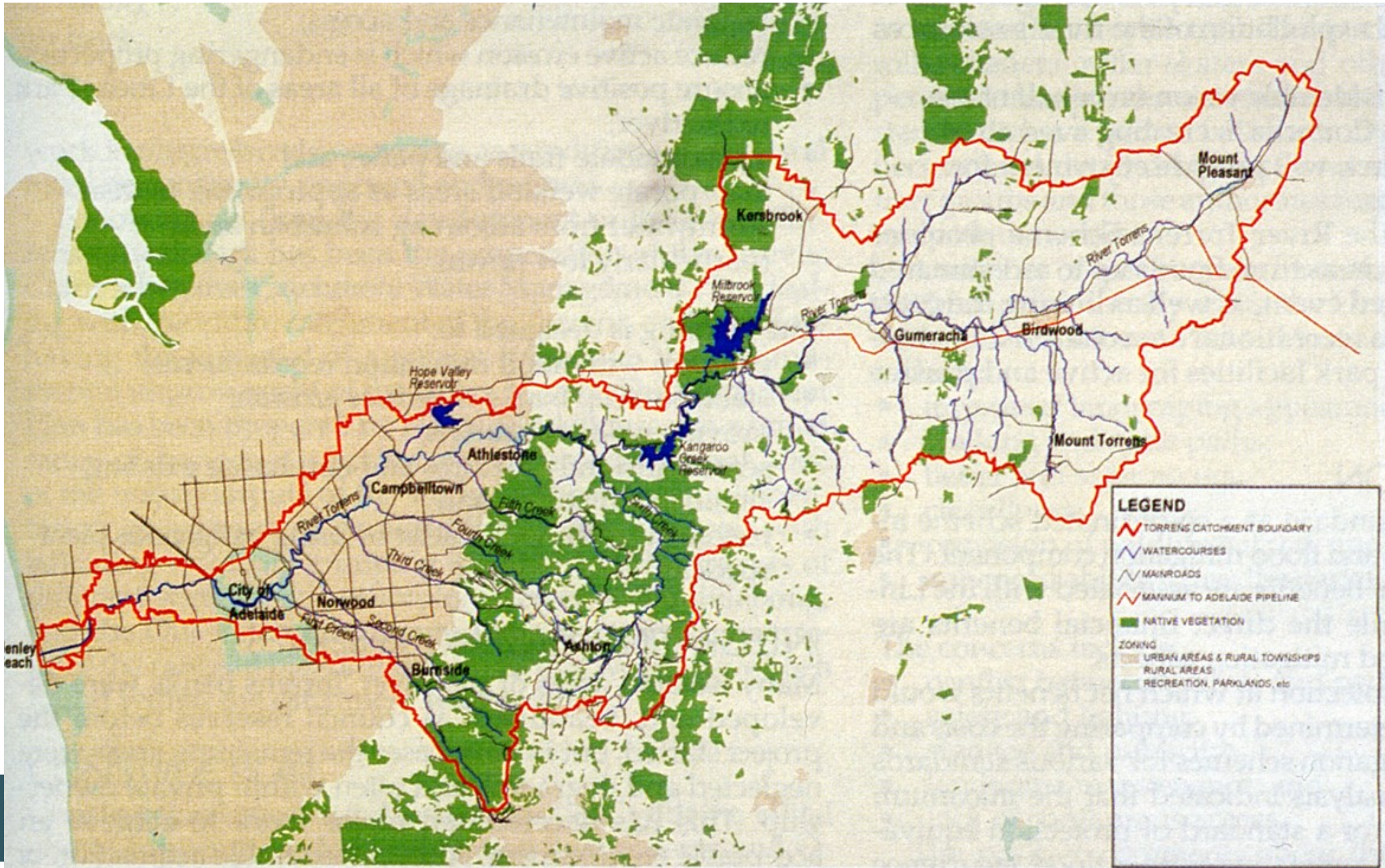
Questions?



Platypus



- Monotreme
- 1-3 eggs
- Incubated in nesting burrow
- Altricial
- Emerge in summer



LEGEND

- TORRENS CATCHMENT BOUNDARY
- WATERCOURSES
- MAINROADS
- MANNUM TO ADELAIDE PIPELINE
- NATIVE VEGETATION

ZONING

- URBAN AREAS & RURAL TOWNSHIPS
- RURAL AREAS
- RECREATION, PARKLANDS, etc

...anything in the guise of a river more ugly than the Torrens would be impossible to either see or describe... —Anthony Trollope prior to 1880



© MAPCO 2010

Changes at Settlement : Destruction of the Torrens

Deforestation, silting up of wetlands, a "sewer" dumping ground, water carting excavation, a public bath





Where to next ?



- 1) Improving Biodiversity esp. native fish, birds mammals and invertebrates
- 2) Improved “whole of Catchment” vision esp via partnerships
- 3) Peroxide trials
- 4) Electro fishing for carp
- 5) Continued work on Urban runoff via WSUD & other onsite practices
- 6) Protect the Gulf from Run-off
- 7) Community engagement and recognition**



eDNA to Track Platypus, and determine whether there are any out there already





[AN SA News and Photos](#)

Duckweed turns section of River Torrens into a sea of green during Adelaide's peak festival season

by: *CITY EDITOR ANTHONY TEMPLETON*

From: *The Advertiser* February 18, 2015 2:27PM





Expectations....



Reality....

